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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/750,416	12/27/2000	Yoichi Nagasaki	P/2007-72	6945

7590 06/02/2004

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EXAMINER

JOHNSON, EDWARD M

ART UNIT PAPER NUMBER

1754

DATE MAILED: 06/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/750,416

Applicant(s)

NAGASAKI ET AL.

Examiner

Edward M. Johnson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16 is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4 and 7-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura WO97/00134 (translated in US 6,228,480) in view of Suzuki et al. US 5,965,479.

Regarding claims 1 and 15, Kimura '480 discloses photocatalyst comprising 50% titanium dioxide fine granule and 25% silica (see Examples 24-25), and also comprising silica particles (see column 5, lines 38-41).

Kimura '480 fails to disclose a maximum length portion of 1-10 mm and a minimum length portion of 0.1 to 10 mm.

Suzuki '479 discloses 1 mm x 3 mm columnar granules (see Example 2) and granules having a size of 0.6 mm (minimum) to 1.2 mm (maximum) (see Example 1).

It is considered that it would have been obvious to one of ordinary skill in the art at the time the invention was made to

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use the columnar dimensions of Suzuki in the titania photocatalytic granules of Kimura because Suzuki discloses his dimensions in a titania photocatalyst granule (see column 5, lines 1-9) having better chloroform removal efficiency (see Examples 1-2).

Regarding claim 8, Kimura '480 discloses a mixture of photocatalyst comprising 50% titanium dioxide fine granule and 25% silica (see Examples 24-25), molding (see column 6, lines 19-22), and drying (see column 5, lines 51-53). Suzuki '479 discloses forming columnar granules with a disk pelletizer (see Example 2), which would obviously, to one of ordinary skill, suggest extrusion through a die.

Regarding claims 2-3 and 11, Kimura '480 discloses soda lime glass plate (see column 18, lines 33-34 and Example 74).

Regarding claims 4 and 13, Kimura '480 discloses titanium dioxide (title, abstract).

Regarding claim 7, Kimura '480 discloses a porous structure (see column 6, lines 46-48).

Regarding claims 9-10, Kimura '480 discloses 25% silica without alkali (see Examples 24-25).

Regarding claim 12, apparatus limitations are not given undue weight in process claims. However, Kimura '480 discloses granules (see Examples 24-25), which would inherently be made by

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a granulator apparatus, and Suzuki discloses a disk pelletizer (see Example 2).

Regarding claim 14, Kimura '480 discloses drying at 50-200 degrees (see column 10, lines 52-55) and coating at 130 degrees (see Example 21).

3. Claims 1-4, 7, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taoda et al. US 5,981,425 in view of Suzuki '479.

Regarding claims 1 and 15, Taoda '425 discloses photocatalyst-containing composition comprising silica (see column 8, lines 11-15 and column 9, lines 50-51) and 3-30% weight photocatalyst (see column 8, lines 25-30, Example 4, and Table 2), in the form of fine granules (see column 5, lines 17-29).

Taoda fails to disclose a max length of 1-10 mm and a min length of 0.1-10mm.

Suzuki '479 discloses 1 mm x 3 mm columnar granules (see Example 2) and granules having a size of 0.6 mm (minimum) to 1.2 mm (maximum) (see Example 1).

It is considered that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the dimensions of Suzuki in the titania photocatalytic granules of Taoda because Suzuki discloses his dimensions in a

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titania photocatalyst granule (see column 5, lines 1-9) having better chloroform removal efficiency (see Examples 1-2).

Regarding claims 2-3, Taoda '425 discloses activated carbon (see column 2, lines 15-16).

Regarding claim 4, Taoda '425 discloses titanium dioxide (abstract).

Regarding claim 7, Taoda '425 discloses porous titanium oxide (see column 2, line 9).

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taoda '425 in view of Suzuki '479, as applied to claim 1, above, and further in view of Heller '169.

Taoda '425 fails to disclose a silica particle diameter of 30-50nm.

Heller '169 discloses a silica diameter of less than 50 nm.

It is considered that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the silica diameter of Heller in the catalyst of Taoda because Heller discloses his silica diameter so as not to prevent photooxidation or photoreduction reactions (see column 5, lines 64-67) and Taoda discloses colloidal silica (column 8, lines 11-15) and spherical silica gel with a diameter of "about 10 microns" (see Reference Example 2), which would obviously, to

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one of ordinary skill, suggest a range around and extending below 10 microns.

Allowable Subject Matter

5. Claim 16 is allowed.

6. The following is a statement of reasons for the indication of allowable subject matter: Photocatalyst granules having 10% or more photocatalyst particles, a balance of silica, a columnar shape, a diameter of 2.5-3.0 mm, and a length of 4.2-5.0 mm would not have been obvious to one of ordinary skill in the art at the time the invention was made.

Response to Arguments

7. Applicant's arguments filed 6/24/03 have been fully considered but they are not persuasive.

Applicant's arguments with respect to the rejected claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward M. Johnson whose telephone number is 571-272-1352. The examiner can normally be reached on M-F 9:30-6:00.

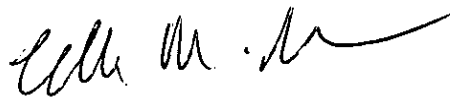
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman

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can be reached on 571-272-1358. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-0987.

EMJ
June 1, 2004

A handwritten signature in black ink, appearing to be "Elli M. H.", is written over the typed name and date.